

## 1.2 Kits for Labeling Proteins and Nucleic Acids

Molecular Probes provides a vast number of standalone reagents for preparation of bioconjugates, most of which are described in detail in other sections of this chapter. This section describes the many specialized kits that we have developed for labeling proteins and nucleic acids with our premiere dyes and haptens (Table 1.1, Table 1.2). As an alternative to direct conjugation of primary antibodies with our reactive dyes and haptens, we strongly recommend using our exclusive Zenon technology (Section 7.2) to form labeled complexes of mouse and rat IgG<sub>1</sub> antibodies (Figure 7.30). Zenon One labeling can be completed in minutes in quantitative yield starting with as little as submicrograms of the antibody, and the conjugate brightness can be easily adjusted by modifying the stoichiometry of the reagents. Although technically not amine-reactive reagents, the Zenon One Labeling Kits that employ our dyes and biotin derivatives are listed in both Table 1.1 and Table 7.1.

### Kits for Labeling Proteins with a Fluorescent Dye or Biotin

#### FluoReporter Protein Labeling Kits

The FluoReporter Protein Labeling Kits (Table 1.1, Table 1.2) facilitate research-scale preparation of protein conjugates labeled with some of our best dyes. Typically, labeling and purifying conjugates with the FluoReporter Protein Labeling Kits can be completed in under three hours, with very little hands-on time. First, the amount of dye necessary for the desired protein sample is calculated using the guidelines outlined in the kit's protocol. After dissolving the dye in DMSO, the calculated amount of dye is added to the protein and the reaction is incubated for 1–1.5 hours. Purification is easily accomplished using convenient spin columns designed for use with proteins of molecular weight  $\geq 30,000$  daltons. The kit components, number of conjugations and conjugation principles are summarized in Table 1.2.

#### Easy-to-Use Protein Labeling Kits

Our easy-to-use protein labeling kits (Table 1.1, Table 1.2) provide a nearly effortless way to label proteins, especially IgG

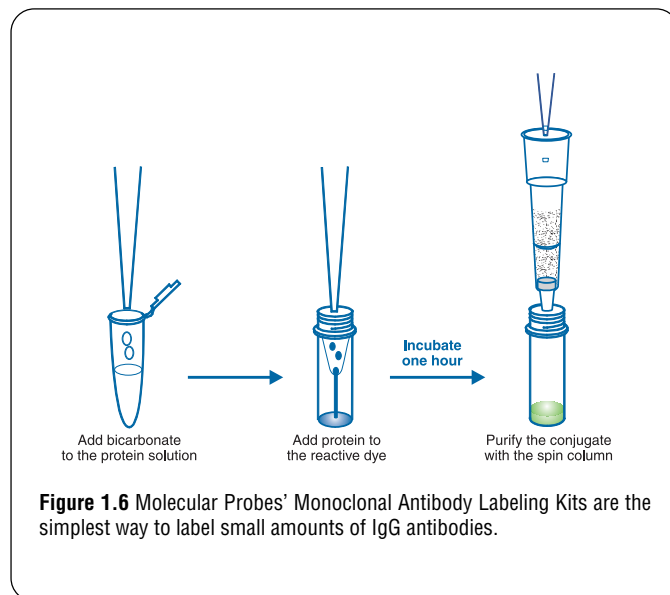
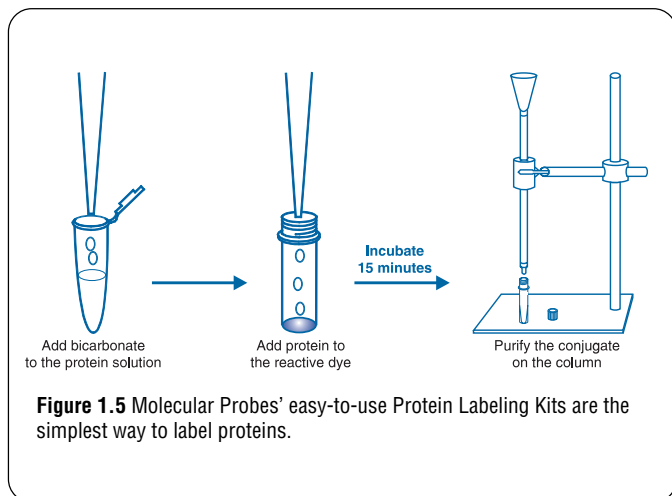
antibodies, with a fluorescent dye (Figure 1.5). Simply add  $\sim 1$  mg of protein (in a volume of  $\sim 500$   $\mu$ L and free of amine-containing buffers such as Tris) to one of the three included vials, which contain a premeasured quantity of amine-reactive dye and a magnetic stir bar. No organic solvents are required. Purification is accomplished on a gravity-feed size-exclusion column, which is supplied with the kit. Labeling and purification can be completed in about two hours, with very little hands-on time. The kit components, number of conjugations and conjugation principles are summarized in Table 1.2.

#### Monoclonal Antibody Labeling Kits

Molecular Probes' newest protein labeling kits (Table 1.1, Table 1.2) provide researchers with a simple, yet efficient means to label small amounts of IgG antibodies with our superior Alexa Fluor dyes (Figure 1.6). Unlike polyclonal antibodies and most other commercially available proteins, monoclonal antibodies are typically only available in small quantities. These kits contain everything needed to perform five separate labeling reactions. Simply dissolve the protein to  $\sim 1$  mg/mL in the provided buffer, then add it to one of the five vials of amine-reactive dye. No organic solvents are required. Purification is accomplished on a size-exclusion spin column optimized for proteins of molecular weight  $\geq 30,000$  daltons. Labeling and purification can be completed in less than two hours. The kit components, number of conjugations and conjugation principles are summarized in Table 1.2.

#### FluoReporter Biotin-XX Protein Labeling Kit

The FluoReporter Biotin-XX Protein Labeling Kit (F-2610, Table 1.2) is designed for five biotinylation reactions, each with 5 to 20 mg of protein; up to 100 mg of protein may be labeled. A gel filtration column is provided for purifying the labeled proteins from excess biotin reagent. Once purified, the degree of biotinylation can be determined using the included avidin–biotin displacement assay; biotinylated goat IgG is provided as a standard. The



**Table 1.1** Succinimidyl esters and kits for labeling proteins and nucleic acids.

Label	Fluorescence Color (Abs/Em) *	Succinimidyl Ester	Protein Labeling Kits	Zenon One Mouse IgG, Labeling Kit	ULYSIS Nucleic Acid Labeling Kit	ARES DNA Labeling Kit	Oligonucleotide Amine Labeling Kit
Alexa Fluor 350	Blue (346/442)	A-10168	A-10170 (P) A-20180 (Mab)	Z-25000		A-21675	A-20190
Marina Blue	Blue (365/460)	M-10165		Z-25040			
Pacific Blue	Blue (410/455)	P-10163		Z-25041	U-21658	A-21673	
Alexa Fluor 430	Yellow-green (433/539)	A-10169	A-10171 (P)	Z-25001			
Fluorescein-EX	Green (494/518)	F-6130	F-10240 (P) F-6433 (F)	Z-25042			
FITC	Green (494/518)		F-6434 (F)				
Alexa Fluor 488	Green (495/519)	A-20000 † A-20100 †	A-10235 (P) A-20181 (Mab)	Z-25002	U-21650	A-21665	A-20191
Oregon Green 488	Green (496/524)	O-6147 O-6149	O-10241 (P) F-6153 (F)	Z-25043	U-21659	A-21674	
Oregon Green 514	Green (511/530)	O-6139	F-6155 (F)				
Alexa Fluor 532	Yellow (532/554)	A-20001 † A-20101 †	A-10236 (P) A-20182 (Mab)	Z-25003	U-21651	A-21666	A-20192
Alexa Fluor 546	Orange (556/573)	A-20002 † A-20102 †	A-10237 (P) A-20183 (Mab)	Z-25004	U-21652	A-21667	A-20193
Alexa Fluor 555	Red-orange (555/565)	A-20009 A-20109	A-20174 (P) A-20187 (Mab)	Z-25005		A-21677	A-20197
Tetramethylrhodamine	Red-orange (555/580)	C-2211 C-6123 C-1171 † T-6105 † (X)	F-6163 (F)				
Rhodamine Red-X	Red-orange (570/590)	R-6160	F-6161 (F)				
Alexa Fluor 568	Red-orange (578/603)	A-20003 † A-20103 †	A-10238 (P) A-20184 (Mab)	Z-25006	U-21653	A-21668	A-20194
Alexa Fluor 594	Red (590/617)	A-20004 † A-20104 †	A-10239 (P) A-20185 (Mab)	Z-25007	U-21654	A-21669	A-20195
Texas Red-X	Red (595/615)	T-6134 † T-20175	T-10244 (P) F-6162 (F)	Z-25045			
Alexa Fluor 633 ‡	Deep red (632/647)	A-20005 † A-20105 †	A-20170 (P)				
Alexa Fluor 647 ‡	Deep red (650/668)	A-20006 A-20106	A-20173 (P) A-20186 (Mab)	Z-25008	U-21660	A-21676	A-20196
Alexa Fluor 660 ‡	Near infrared (663/690)	A-20007 A-20107	A-20171 (P)	Z-25009	U-21656	A-21671	
Alexa Fluor 680 ‡	Near infrared (679/702)	A-20008 A-20108	A-20172 (P)	Z-25010	U-21657	A-21672	
Alexa Fluor 700 ‡	Near infrared (702/723)	A-20010 A-20110		Z-25011			
Alexa Fluor 750 ‡	Near infrared (749/775)	A-20011 A-20111		Z-25012			
Biotin-XX	NA	B-1606 B-6353	F-2610 (FMB) F-6347 (FB)	Z-25052			
DNP-biotin	NA (364/none)	B-2604	F-6348 (F)				
DSB-X biotin	NA	NA	D-20655 (D)	Z-25053			

\* Approximate absorption (Abs) and fluorescence emission (Em) maxima for conjugates, in nm. † Mixed isomers. ‡ Human vision is insensitive to light beyond ~650 nm, and therefore it is not possible to view the far-red-fluorescent dyes by looking through the eyepiece of a conventional fluorescence microscope.

(D) = DSB-X Biotin Protein Labeling Kit. (F) = FluoReporter Protein Labeling Kit. (FB) = FluoReporter Biotin-XX Protein Labeling Kit. (FMB) = FluoReporter Mini-Biotin-XX Protein Labeling Kit. (Mab) = Monoclonal Antibody Labeling Kit. (P) = Easy-to-Use Protein Labeling Kit. (X) = An aminohexanoyl spacer between the dye and the SE. NA = Not applicable.

**Table 1.2** Molecular Probes' kits for protein and nucleic acid labeling.

Kit Name	Kit Components	# Labelings	Assay Principle
Easy-to-Use Protein Labeling Kit	<ul style="list-style-type: none"> <li>• Three vials of the succinimidyl ester of the corresponding fluorescent dye, each containing a magnetic stir bar</li> <li>• Sodium bicarbonate buffer</li> <li>• Gravity-feed columns, a size-exclusion resin and concentrated elution buffer for conjugate purification</li> <li>• Column funnels, foam column holders, disposable pipettes and collection tubes</li> <li>• An easy-to-follow protocol for conjugation, purification and determination of the degree of labeling</li> </ul>	Three ~1 mg protein samples of a 150,000-dalton protein, such as an IgG	The protein is added to one of the three vials of the amine-reactive dye. The reactive dye has a succinimidyl ester moiety that reacts efficiently with primary amines of proteins to form stable dye–protein conjugates. Purification of the conjugate can be accomplished on the included gravity-feed size-exclusion columns.
FluoReporter Protein Labeling Kit	<ul style="list-style-type: none"> <li>• Five vials of the amine-reactive dye</li> <li>• Anhydrous DMSO</li> <li>• Reaction tubes, each containing a stir bar</li> <li>• Ten spin columns</li> <li>• Collection tubes</li> <li>• A detailed protocol</li> </ul>	Five to ten protein samples of 0.2 to 2 mg each in 200 $\mu$ L volumes	The amount of dye necessary for the desired protein sample is calculated using the guidelines outlined in the kit's protocol. The reactive dye has a succinimidyl ester moiety that reacts efficiently with primary amines of proteins to form stable dye–protein conjugates. Purification of the conjugate can be easily accomplished using the included spin columns.
Monoclonal Antibody Labeling Kit	<ul style="list-style-type: none"> <li>• Five vials of the succinimidyl ester of the corresponding fluorescent dye</li> <li>• Sodium bicarbonate buffer</li> <li>• Five spin columns and collection tubes</li> <li>• An easy-to-follow protocol for conjugation, purification and determination of the degree of labeling</li> </ul>	Five labelings of ~100 $\mu$ g monoclonal IgG samples (although other proteins can be labeled)	The protein is added to one of the five vials of amine-reactive dye. The reactive dye has a succinimidyl ester moiety that reacts efficiently with primary amines of proteins to form stable dye–protein conjugates. The conjugate can be purified on the included size-exclusion spin columns.
Zenon One Mouse IgG <sub>1</sub> Labeling Kit	See Section 7.2	See Section 7.2	See Section 7.2
ULYSIS Nucleic Acid Labeling Kit	<ul style="list-style-type: none"> <li>• The ULS labeling reagent and an appropriate solvent</li> <li>• Labeling buffer</li> <li>• Deoxyribonuclease I (DNase I), for digesting DNA longer than 1000 base-pairs prior to labeling</li> <li>• DNase I storage and reaction buffers</li> <li>• Control DNA from calf thymus</li> <li>• Nuclease-free H<sub>2</sub>O</li> <li>• A detailed procedure for preparing fluorescent DNA hybridization probes for chromosome <i>in situ</i> hybridization and dot-blot hybridization</li> </ul>	20 labelings of 1 $\mu$ g DNA	The ULS reagent reacts with the <i>N</i> -7 position of guanine residues to provide a stable coordination complex between the nucleic acid and the fluorophore label. Separation of the labeled nucleic acids from the unreacted ULS complex can be accomplished through a simple procedure using a spin column (not provided).
ARES DNA Labeling Kit	<ul style="list-style-type: none"> <li>• 5-(3-Aminoallyl)-dUTP</li> <li>• The amine-reactive fluorescent dye and an appropriate solvent</li> <li>• Sodium bicarbonate</li> <li>• Nuclease-free H<sub>2</sub>O</li> <li>• A detailed protocol for labeling DNA using reverse transcriptase or nick translation</li> </ul>	Five to ten labelings of 1–5 $\mu$ g DNA	In the first step, an amine-modified nucleotide, 5-(3-aminoallyl)-dUTP, is incorporated into DNA using conventional enzymatic labeling methods. In the second step, the amine-modified DNA is chemically labeled using an amine-reactive fluorescent dye. The amine-modified DNA can be purified using a commercially available purification kit (not provided).
Oligonucleotide Amine Labeling Kit	<ul style="list-style-type: none"> <li>• Three vials of the amine-reactive dye</li> <li>• DMSO</li> <li>• Three vials of labeling buffer</li> <li>• A detailed protocol</li> </ul>	Three labelings of 50 $\mu$ g of oligonucleotide	The reactive dye used in the assay has an amine-reactive succinimidyl ester moiety that reacts efficiently with an amine-modified oligonucleotide. Following the labeling reaction, the conjugate can be purified from the reaction mixture by preparative gel electrophoresis or reverse-phase HPLC.
FluoReporter Biotin-XX Protein Labeling Kit	<ul style="list-style-type: none"> <li>• Biotin-XX, succinimidyl ester</li> <li>• Anhydrous DMSO</li> <li>• A gel filtration column</li> <li>• Avidin–HABA complex</li> <li>• Biotinylated goat IgG</li> <li>• A detailed protocol</li> </ul>	Five biotinylation reactions, each with 5–20 mg of protein	The biotin-XX succinimidyl ester (SE) reacts with primary amines of proteins or other biomolecules to form stable biotin conjugates. The biotin-XX SE has a 14-atom spacer that enhances the binding of biotin derivatives to avidin's relatively deep binding sites. A gel filtration column is provided for purifying the labeled proteins from excess biotin reagent. After purification, the degree of biotinylation can be estimated using the included avidin–biotin displacement assay.

**Table 1.2** Molecular Probes' kits for protein and nucleic acid labeling — **continued.**

Kit Name	Kit Components	# Labelings	Assay Principle
FluoReporter Mini-Biotin-XX Protein Labeling Kit	<ul style="list-style-type: none"> <li>• Biotin-XX, sulfosuccinimidyl ester</li> <li>• Reaction tubes, each containing a stir bar</li> <li>• Five spin columns</li> <li>• Collection tubes</li> <li>• Dialysis tubing</li> <li>• A detailed protocol</li> </ul>	Five biotinylation reactions of 0.1–3 mg each	The biotin-XX sulfosuccinimidyl ester (SSE) is water soluble and reacts with primary amines of proteins or other biomolecules to form stable biotin conjugates. The biotin-XX SSE has a 14-atom spacer that enhances the binding of biotin derivatives to avidin's relatively deep binding sites. Ready-to-use spin columns are included for purification of the biotinylated protein from excess reagents.
DSB-X Biotin Protein Labeling Kit	<ul style="list-style-type: none"> <li>• DSB-X biotin, succinimidyl ester (five vials)</li> <li>• DMSO for dissolving the succinimidyl ester</li> <li>• Reaction tubes</li> <li>• A purification resin, spin columns and collection tubes for small-scale purifications</li> <li>• Dialysis tubing for larger-scale separations</li> <li>• A detailed protocol for conjugations and purifications</li> </ul>	Five protein conjugations of 0.5–3 mg each	DSB-X biotin succinimidyl ester, a derivative of desthiobiotin with an additional seven-atom spacer, reacts with amine groups of biomolecules to form stable amides. The DSB-X biotin conjugate can be detected with avidin or streptavidin derivatives. Binding is almost totally reversed by addition of free biotin at neutral pH and normal ionic strength. Materials are included for both small- and large-scale preparations.

kit components, number of conjugations and conjugation principles are summarized in Table 1.2. The Zenon One Biotin-XX Mouse IgG<sub>1</sub> Labeling Kit (Z-25052) is a useful alternative for rapid and quantitative modification of any whole mouse IgG<sub>1</sub> antibody. See Section 7.2 for a complete description of our Zenon technology.

#### **FluoReporter Mini-Biotin-XX Protein Labeling Kit**

The FluoReporter Mini-Biotin-XX Protein Labeling Kit (F-6347, Table 1.2) permits efficient biotinylation of small amounts of antibodies or other proteins. The water-soluble biotin-XX sulfosuccinimidyl ester has a 14-atom spacer (Figure 1.7) that enhances the binding of biotin derivatives to avidin's relatively deep binding sites. The ready-to-use spin columns provide a convenient method of purifying the biotinylated protein from excess reagents. The kit components, number of conjugations and conjugation principles are summarized in Table 1.2.

#### **DSB-X Biotin Protein Labeling Kit**

Our unique DSB-X biotin technology, which is described in detail in Section 7.6, permits the facile reversal of the virtually irreversible biotin–avidin interaction under extremely gentle conditions. DSB-X biotin succinimidyl ester, a derivative of desthiobiotin (Figure 4.1) with an additional seven-atom spacer, reacts with amine groups of biomolecules to form stable amides. The DSB-X biotin conjugate can be detected with any of the avidin or streptavidin derivatives described in Section 7.6. Binding is almost totally reversed by addition of free biotin (B-1595, B-20656; Section 4.2) at neutral pH and normal ionic strength. Significantly, DSB-X biotin–conjugated biopolymers can be separated from complex mixtures using agarose affinity matrices (Figure 7.85) or our Captivate ferrofluid superparamagnetic particles (Figure 7.94). Magnetic separation can include cells targeted by the DSB-X biotin conjugate. Our DSB-X Bioconjugate Isolation Kits #1 and #2 (D-20658, D-20659; Section 7.6) provide the reagents and protocols for using DSB-X biotin conjugates. The DSB-X Biotin Protein Labeling Kit (D-20655) contains the re-

agents required for five protein conjugations of 0.5–3 mg each. The kit components, number of conjugations and conjugation principles are summarized in Table 1.2.

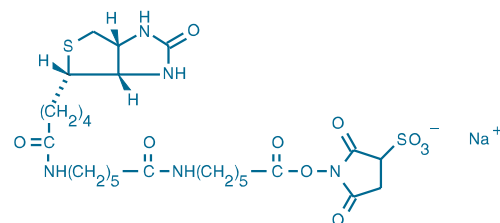
As an alternative to direct labeling of primary antibodies with the DSB-X biotin succinimidyl ester, our Zenon One DSB-X Biotin Mouse IgG<sub>1</sub> Labeling Kit (Z-25053, Section 7.2) gives rapid and quantitative complex formation with any whole mouse or rat IgG<sub>1</sub> monoclonal antibody.

#### **FluoReporter Biotin/DNP Protein Labeling Kit**

The FluoReporter Biotin/DNP Protein Labeling Kit (F-6348, Table 1.1) provides the necessary reagents for labeling proteins with DNP-X–biotin-X succinimidyl ester (Figure 4.4). The degree of biotinylation of proteins labeled with this reagent can be assessed from the optical absorbance of DNP ( $\epsilon = 15,000 \text{ cm}^{-1}\text{M}^{-1}$  at ~360 nm). The conjugates are recognized by both avidin derivatives and anti-DNP antibodies, permitting a choice of detection techniques. Sufficient reagents are supplied for 5 to 10 labeling reactions of 0.2 to 2 mg of protein each.

#### **Zenon One Mouse IgG<sub>1</sub> Labeling Kits**

Our Zenon One Mouse IgG<sub>1</sub> Labeling Kits (Table 1.1, Table 7.1), which are described in detail in Section 7.2, are useful for



**Figure 1.7** B-6352 6-((6-((biotinoyl)amino)hexanoyl)amino)hexanoic acid, sulfosuccinimidyl ester, sodium salt (biotin-XX, SSE).

the rapid and quantitative labeling of mouse IgG<sub>1</sub> isotype antibodies with dyes (including phycobiliproteins), haptens (including both biotin and DSB-X biotin) and enzymes (Figure 7.32). Zenon One Labeling Kits, which are available for most of the premiere dyes in this chapter, are designed to label intact monoclonal antibodies in amounts from less than 1 µg to as much as 50 µg. Multicolor labeling of different targets in the same sample with multiple mouse antibodies and in combination with direct conjugates is a very practical approach. Zenon One Labeling Kits for phycobiliproteins, tandem conjugates of phycobiliproteins and enzymes are discussed in Section 7.2.

## Nucleic Acid Labeling Kits

### ARES DNA Labeling Kits

The ARES DNA Labeling Kits (Table 1.1, Table 8.8) provide a versatile, two-step method for labeling DNA with 12 of our premiere fluorescent dyes (Figure 8.44). In the first step, an amine-modified nucleotide, 5-(3-aminoallyl)-dUTP (Figure 8.46), is incorporated into DNA using conventional enzymatic labeling methods. This step ensures relatively uniform labeling of the probe with primary amine groups. The aminoallyl dUTP substrate used in this reaction is taken up efficiently by reverse transcription or nick translation, for which we provide the protocols; other enzymatic methods are also likely to be compatible. In the second step, the amine-modified DNA is chemically labeled using an amine-reactive fluorescent dye. This chemical reaction varies little in its efficiency from dye to dye, so that it is possible to use any combination of the ARES Kits, with their broad selection of the brightest and most photostable dyes, and obtain consistent DNA labeling. The labeling protocols provided generally result in about one dye per 12–15 bases, which we have determined to be optimal for fluorescence *in situ* hybridization (FISH) and dot-blot hybridization. See Section 8.2 for a complete description of the ARES Kits and Section 8.5 for applications of nucleic acid probes prepared using the ARES reagents.

### Alexa Fluor Oligonucleotide Amine Labeling Kits

The Alexa Fluor Oligonucleotide Amine Labeling Kits (Section 8.2; Table 1.1, Table 1.2, Table 8.9) provide the reagents required for labeling synthetic oligonucleotides that have amine groups incorporated at their 5'-terminus. Following purification by standard chromatographic or electrophoretic procedures, these singly labeled oligonucleotides can serve as primers for a variety of applications. The dye-labeled oligonucleotides may also serve as either fluorescence resonance energy transfer (FRET, see Section 1.3) acceptors or donors in hybridization reactions. The kit components, number of conjugations and conjugation principles are summarized in Table 1.2.

### ULYSIS Nucleic Acid Labeling Kits

The ULYSIS Alexa Fluor Nucleic Acid Labeling Kits (Section 8.2; Table 1.1, Table 1.2, Table 8.7) combine our Alexa Fluor fluorophores with the versatile, patented Universal Linkage System (ULS) platinum-based chemistry developed at KREATECH Diagnostics, resulting in a simple, fail-safe method for producing fluorescent hybridization probes. The ULS method is based on the use of a platinum dye complex, patented by KREATECH Biotechnology BV, that forms a stable adduct with the *N*-7 position of guanine and, to a lesser extent, adenine bases in DNA, RNA, PNA and oligonucleotides (Figure 8.41). The labeling reaction takes only 15 minutes, and separation of the labeled nucleic acids from the unreacted ULS complex can be accomplished through the use of a simple spin-column procedure (Figure 8.42). The kit components, number of conjugations and conjugation principles are summarized in Table 1.2.

In addition to the ULYSIS Alexa Fluor Nucleic Acid Labeling Kits, we offer ULYSIS Kits containing our Pacific Blue and Oregon Green 488 dyes (Table 1.1, Table 8.7). Probes labeled using the ULYSIS Kits are stable indefinitely and hybridize effectively to target DNA. The ULS method has been used to prepare labeled probes for dot, Southern and Northern blot analysis, RNA and DNA *in situ* hybridization, multicolor FISH, comparative genome hybridization (CGH) and microarray analysis.

## Product List — 1.2 Protein and Nucleic Acid Labeling Kits

Cat #	Product Name	Unit Size
A-20180	Alexa Fluor <sup>®</sup> 350 Monoclonal Antibody Labeling Kit *5 labelings*	1 kit
A-20181	Alexa Fluor <sup>®</sup> 488 Monoclonal Antibody Labeling Kit *5 labelings*	1 kit
A-20182	Alexa Fluor <sup>®</sup> 532 Monoclonal Antibody Labeling Kit *5 labelings*	1 kit
A-20183	Alexa Fluor <sup>®</sup> 546 Monoclonal Antibody Labeling Kit *5 labelings*	1 kit
A-20187	Alexa Fluor <sup>®</sup> 555 Monoclonal Antibody Labeling Kit *5 labelings*	1 kit
A-20184	Alexa Fluor <sup>®</sup> 568 Monoclonal Antibody Labeling Kit *5 labelings*	1 kit
A-20185	Alexa Fluor <sup>®</sup> 594 Monoclonal Antibody Labeling Kit *5 labelings*	1 kit
A-20186	Alexa Fluor <sup>®</sup> 647 Monoclonal Antibody Labeling Kit *5 labelings*	1 kit
A-20190	Alexa Fluor <sup>®</sup> 350 Oligonucleotide Amine Labeling Kit *3 labelings*	1 kit
A-20191	Alexa Fluor <sup>®</sup> 488 Oligonucleotide Amine Labeling Kit *3 labelings*	1 kit
A-20192	Alexa Fluor <sup>®</sup> 532 Oligonucleotide Amine Labeling Kit *3 labelings*	1 kit
A-20193	Alexa Fluor <sup>®</sup> 546 Oligonucleotide Amine Labeling Kit *3 labelings*	1 kit
A-20197	Alexa Fluor <sup>®</sup> 555 Oligonucleotide Amine Labeling Kit *3 labelings*	1 kit
A-20194	Alexa Fluor <sup>®</sup> 568 Oligonucleotide Amine Labeling Kit *3 labelings*	1 kit
A-20195	Alexa Fluor <sup>®</sup> 594 Oligonucleotide Amine Labeling Kit *3 labelings*	1 kit
A-20196	Alexa Fluor <sup>®</sup> 647 Oligonucleotide Amine Labeling Kit *3 labelings*	1 kit
A-10170	Alexa Fluor <sup>®</sup> 350 Protein Labeling Kit *3 labelings*	1 kit
A-10171	Alexa Fluor <sup>®</sup> 430 Protein Labeling Kit *3 labelings*	1 kit

Cat #	Product Name	Unit Size
A-10235	Alexa Fluor <sup>®</sup> 488 Protein Labeling Kit *3 labelings*	1 kit
A-10236	Alexa Fluor <sup>®</sup> 532 Protein Labeling Kit *3 labelings*	1 kit
A-10237	Alexa Fluor <sup>®</sup> 546 Protein Labeling Kit *3 labelings*	1 kit
A-20174	Alexa Fluor <sup>®</sup> 555 Protein Labeling Kit *3 labelings*	1 kit
A-10238	Alexa Fluor <sup>®</sup> 568 Protein Labeling Kit *3 labelings*	1 kit
A-10239	Alexa Fluor <sup>®</sup> 594 Protein Labeling Kit *3 labelings*	1 kit
A-20170	Alexa Fluor <sup>®</sup> 633 Protein Labeling Kit *3 labelings*	1 kit
A-20173	Alexa Fluor <sup>®</sup> 647 Protein Labeling Kit *3 labelings*	1 kit
A-20171	Alexa Fluor <sup>®</sup> 660 Protein Labeling Kit *3 labelings*	1 kit
A-20172	Alexa Fluor <sup>®</sup> 680 Protein Labeling Kit *3 labelings*	1 kit
A-21675	ARESTM Alexa Fluor <sup>®</sup> 350 DNA Labeling Kit *5–10 labelings*	1 kit
A-21665	ARESTM Alexa Fluor <sup>®</sup> 488 DNA Labeling Kit *5–10 labelings*	1 kit
A-21666	ARESTM Alexa Fluor <sup>®</sup> 532 DNA Labeling Kit *5–10 labelings*	1 kit
A-21667	ARESTM Alexa Fluor <sup>®</sup> 546 DNA Labeling Kit *5–10 labelings*	1 kit
A-21677	ARESTM Alexa Fluor <sup>®</sup> 555 DNA Labeling Kit *5–10 labelings*	1 kit
A-21668	ARESTM Alexa Fluor <sup>®</sup> 568 DNA Labeling Kit *5–10 labelings*	1 kit
A-21669	ARESTM Alexa Fluor <sup>®</sup> 594 DNA Labeling Kit *5–10 labelings*	1 kit
A-21676	ARESTM Alexa Fluor <sup>®</sup> 647 DNA Labeling Kit *5–10 labelings*	1 kit
A-21671	ARESTM Alexa Fluor <sup>®</sup> 660 DNA Labeling Kit *5–10 labelings*	1 kit
A-21672	ARESTM Alexa Fluor <sup>®</sup> 680 DNA Labeling Kit *5–10 labelings*	1 kit
A-21674	ARESTM Oregon Green <sup>®</sup> 488 DNA Labeling Kit *5–10 labelings*	1 kit
A-21673	ARESTM Pacific Blue <sup>™</sup> DNA Labeling Kit *5–10 labelings*	1 kit
D-20655	DSB-X <sup>™</sup> Biotin Protein Labeling Kit *5 labelings*	1 kit
F-6348	FluoReporter <sup>®</sup> Biotin/DNP Protein Labeling Kit *5–10 labelings*	1 kit
F-2610	FluoReporter <sup>®</sup> Biotin-XX Protein Labeling Kit *5 labelings of 5–20 mg protein each*	1 kit
F-6434	FluoReporter <sup>®</sup> FITC Protein Labeling Kit *5–10 labelings*	1 kit
F-6433	FluoReporter <sup>®</sup> Fluorescein-EX Protein Labeling Kit *5–10 labelings*	1 kit
F-6347	FluoReporter <sup>®</sup> Mini-biotin-XX Protein Labeling Kit *5 labelings of 0.1–3 mg protein each*	1 kit
F-6153	FluoReporter <sup>®</sup> Oregon Green <sup>®</sup> 488 Protein Labeling Kit *5–10 labelings*	1 kit
F-6155	FluoReporter <sup>®</sup> Oregon Green <sup>®</sup> 514 Protein Labeling Kit *5–10 labelings*	1 kit
F-6161	FluoReporter <sup>®</sup> Rhodamine Red <sup>™</sup> -X Protein Labeling Kit *5–10 labelings*	1 kit
F-6163	FluoReporter <sup>®</sup> Tetramethylrhodamine Protein Labeling Kit *5–10 labelings*	1 kit
F-6162	FluoReporter <sup>®</sup> Texas Red <sup>®</sup> -X Protein Labeling Kit *5–10 labelings*	1 kit
F-10240	Fluorescein-EX Protein Labeling Kit *3 labelings*	1 kit
O-10241	Oregon Green <sup>®</sup> 488 Protein Labeling Kit *3 labelings*	1 kit
T-10244	Texas Red <sup>®</sup> -X Protein Labeling Kit *3 labelings*	1 kit
U-21650	ULYSIS <sup>®</sup> Alexa Fluor <sup>®</sup> 488 Nucleic Acid Labeling Kit *20 labelings*	1 kit
U-21651	ULYSIS <sup>®</sup> Alexa Fluor <sup>®</sup> 532 Nucleic Acid Labeling Kit *20 labelings*	1 kit
U-21652	ULYSIS <sup>®</sup> Alexa Fluor <sup>®</sup> 546 Nucleic Acid Labeling Kit *20 labelings*	1 kit
U-21653	ULYSIS <sup>®</sup> Alexa Fluor <sup>®</sup> 568 Nucleic Acid Labeling Kit *20 labelings*	1 kit
U-21654	ULYSIS <sup>®</sup> Alexa Fluor <sup>®</sup> 594 Nucleic Acid Labeling Kit *20 labelings*	1 kit
U-21660	ULYSIS <sup>®</sup> Alexa Fluor <sup>®</sup> 647 Nucleic Acid Labeling Kit *20 labelings*	1 kit
U-21656	ULYSIS <sup>®</sup> Alexa Fluor <sup>®</sup> 660 Nucleic Acid Labeling Kit *20 labelings*	1 kit
U-21657	ULYSIS <sup>®</sup> Alexa Fluor <sup>®</sup> 680 Nucleic Acid Labeling Kit *20 labelings*	1 kit
U-21659	ULYSIS <sup>®</sup> Oregon Green <sup>®</sup> 488 Nucleic Acid Labeling Kit *20 labelings*	1 kit
U-21658	ULYSIS <sup>®</sup> Pacific Blue <sup>™</sup> Nucleic Acid Labeling Kit *20 labelings*	1 kit
Z-25000	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 350 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25001	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 430 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25002	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 488 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25003	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 532 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25004	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 546 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25005	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 555 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25006	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 568 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25007	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 594 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25008	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 647 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25009	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 660 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25010	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 680 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25011	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 700 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25012	Zenon <sup>™</sup> One Alexa Fluor <sup>®</sup> 750 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25042	Zenon <sup>™</sup> One Fluorescein Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25040	Zenon <sup>™</sup> One Marina Blue <sup>®</sup> Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25043	Zenon <sup>™</sup> One Oregon Green <sup>®</sup> 488 Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25041	Zenon <sup>™</sup> One Pacific Blue <sup>™</sup> Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit
Z-25045	Zenon <sup>™</sup> One Texas Red <sup>®</sup> -X Mouse IgG <sub>1</sub> Labeling Kit *50 labelings*	1 kit